INNOVA

XP4 Quick Set Up & Installation Guide

840-900100-001 rev 5 3-20-96

First Time Installation and Power Up

Follow these simple steps to Install the XP4 Radio at both ends of a link for the first time.

Prerequisite:

Check that the **Antenna, Outdoor ARU Unit** and **Indoor SIU Unit** are mounted according to the Installation Instruction provided in the shipping cartons and that the coaxial cable between the Indoor and Outdoor Units is properly connected . At this point all mechanical installation steps should have been completed and DC Power is ready to be applied to the terminal.

Step 1 Power Up the Terminal

Plug the DC power connector into the Indoor SIU Unit and observe the front panel display. The XP4 will automatically check that the installed units are compatible, and display error messages to assist in identifying the problem if not. If the front panel LED's and display are not illuminated, check for a blown or missing DC fuse on the Indoor SIU Unit.

- The first message displayed will be "ARU ?". If this is followed within about 3 seconds by the message "INSTALL", skip to Step 2
- If the "ARU ?" message remains displayed the problem may be one of the following:
  - ⇒ An Outdoor ARU Unit is not installed.
  - ⇒ The coaxial cable is not connected properly either at the Outdoor ARU end or at the Indoor SIU.
  - ⇒ The Outdoor ARU Unit and Indoor SIU Unit are not compatible and are not intended to be working together. (Check the part numbers of the Indoor SIUand Outdoor ARU Units to determine if the correct units have been installed).
  - ⇒ The Indoor SIU Unit does not have a frequency plan installed which is compatible with the Outdoor ARU Unit fixed parameters.

Step 2 Starting Install Steps

- Press "ENTER" once.
- If a Front Panel Access PIN is required the"PIN/LOGOUT" LED will light indicating that a PIN must be entered. Enter the PIN using the steps shown under "Entering A Front Panel Access PIN" of this instruction card. Otherwise, skip to Step 3.

Step 3 Set Traffic Capacity (2x, 4x, 8x)

- capacity of 4xE1or T1. To change the capacity use the "UP" or "DOWN" keys to select from the available choices.
- Press "ENTER" once Use "SELECT" to display the "BER/CAPACITY".
- The display will show "0Err c4"where "c4" represents a traffic capacity of 4xE1 or 4xT1,.

Step 4 Set Transmit Frequency

- Use "SELECT" to display Transmit Frequency.
- The nominal Transmit center frequency of the Outdoor ARU Unit will now be displayed. To change the frequency use the "UP" or "DOWN" keys to select from the available channels.
- Press "ENTER" once.

Step 5 Set Transmit Power

- Use "SELECT" to display Transmit Power .
- The transmit power level will be displayed as "OFF" or muted.
- To change the transmit power use the "UP" or "DOWN" keys to select the value required.
- Press "ENTER" once.

Step 6 Set Link ID Code

- Use "SELECT" to display Link ID .
- The Link ID Code will be displayed. To change the Link ID Code use the "UP" or "DOWN" keys to select the value required.
- Press "ENTER" once

Step 7 Alarm Check

With no Tributary inputs connected to the XP4, all alarm indications will be normal, except for the RSL Alarm, which will depend upon whether the radio path has been established and the remote terminal has been installed and powered up. (See antenna alignment instructions)

Antenna Alignment

Follow these steps to align the antennas over a radio path after both terminals have been installed and powered up.

Prerequisite

The XP4 terminals at both ends of the link have passed the "First Time Installation & Power Up" procedures in this instruction have been completed

Step 1 Measure Received Signal Level

Remove the BNC connector on the Outdoor ARU Unit and Connect a DC Voltmeter with a range of 0 to 5 VDC. Notice the Audible indication of received level.

Step 2 Align the Antenna - Both ends of the Link

Install the Gun Sight visual alignment aid. Loosen the antenna mount using the Allen Key provided and pan the antenna taking advantage of the Audible Indicator, Gun Sight and the DC Voltmeter. Tighten and lock both the elevation and azimuth adjustments using the Allen Key.

Step 3 Verify Received Level

The DC Voltage on the BNC connector is calibrated such that 1VDC equals -80dBm, and that for each 1dB increase in received level the DC Voltage increases by 0.1 VDC (10dB per Volt) Example: 1VDC equals -80dBm, 2VDC equals -70dBm, 3.5VDC equals -55dBm and 4VDC equals -50dBm.

Step 4 Verify Link Operation

At the Indoor SIU Unit verify the Received Signal Level Display matched the expected value and that the BER performance monitor indicates "0Err" All alarm indications should be normal without any Data tributaries connected. This indicates that the link is operating normally and ready to transmit Tributary Data

Tributary Data Input Set Up

Tributary data input alarms are usually defaulted to "inverted" For each tributary to be used follow the following steps:

Step 1 Set Tributary Alarms for Active Ports.
On the Front Panel press "SELECT" until the "TRIB CFG" is selected. The display will show "TRIB 1(n or I).

Step 2 Change a Specific Tributary Alarm Configuration
To change the TRIB Configuration use the "UP" or "DOWN" keys to select "n" (normal or active) or "I" (inverted or not used) Press "ENTER" to save that selection and move to the next Tributary.

Step 3 Set all TributariesRepeat for all available tributaries using the "ENTER"key to step through the available tributaries

Entering A Front Panel Access PIN

Access to the "Change" feature is set as part of the default condition and may be protected by a front panel access PIN provided authorized operators.

Step 1 Entering a PIN (four to seven digits)

- Press "SELECT" to display "PIN/LOGOUT" on the front panel.
- Use the "UP" or "DOWN" keys to display the first digit of your front panel access PIN
- Press "ENTER" once. The display will move to the next digit
- position of your PIN.

Step 2 Entering subsequent PIN digits

- Use the "UP" or "DOWN" keys to display the second digit of your front panel access PIN
- Press "ENTER" once. The display will move to the next digit position of your PIN.
- Repeat this step until you have entered all the digits of your PIN then press "ENTER" twice

Step 3 Verifying Log-in

- When fully logged-in, the orange "LOGGED IN" LED will illuminate.
- If the "LOGGED IN" LED light remains unlit, repeat steps 1-3 to re-enter the PIN.

Note that the XP4 will automatically log out after the front panel controls have been inactive for more than 5 minutes

Viewing and Changing Link Parameters After Installation

Viewing Link Parameters

An operating XP4 Radio Link receiving a signal level above threshold can be monitored using the front panel "View" feature. The Viewing feature does not require a front panel access PIN and none of the installed values can be changed. Use the "SELECT" key to view the SL, BER and Traffic Capacity, Transmit Frequency, Transmit Power, Link ID Code, and Tributary Alarm Configuration. Use the "LOCAL" or "REMOTE" key to view both ends of the link.

Changing Link Parameters

Changing values in most cases may interrupt normal transmission and therefore should be done recognizing this impact on the data being transmitted by each active tributary. The Steps required to Change Link Parameters are the same as those shown for "First Time Installation and Power Up" of this instruction card except as shown below.

Changing Transmitter Frequency

When the Transmit Frequency is changed on an operating link both ends of the link change together. During the change communications will be lost for a few seconds before the link is re-established on the new frequency. This process is completely automatic and should it fail, after about 5 to 10 seconds the link will revert back to the original Transmit Frequency automatically.

Changing Traffic Capacity

Changing the Link Traffic Capacity (2x, 4x, 8x) requires changes to be made at both ends of the Link. This cannot be performed from one end only because the frequency plan and channel frequency most both be changed independently.

Changing Other Parameters

All other parameters can be Viewed and/or Changed from one end of the Link by selecting either the "LOCAL" or "REMOTE" keys.

Innova XP4 First Time Installation & Power Up

Follow these simple steps to Install the XP4 Radio at both ends of a link for the first time.

Prerequisite

Check that the **Antenna, Outdoor ARU Unit** and **Indoor SIU Unit** are mounted according to the Installation Instruction provided in the shipping cartons and that the coaxial cable between the Indoor and Outdoor Units is properly connected . At this point all mechanical installation steps should have been completed and DC Power is ready to be applied to the terminal.

Depending on the default parameters of the terminal you may require a Front Panel Access PIN. If you have been provided with a PIN then follow the steps to enter it described in "Entering A Front Panel Access PIN" when prompted.

Step 1 Power Up the Terminal

Plug the DC power connector into the Indoor SIU Unit and observe the front panel display. The XP4 will automatically check that the installed units are compatible, and if not error messages will be displayed to assist in identifying the problem . If the front panel LED's and display are not illuminated check for a blown or missing DC fuse on the Indoor SIU Unit.

A. The first message displayed will be "ARU ?".
If this is followed within about 3 seconds by the message "INSTALL" then skip to Step 2

B. If the "ARU ?" message remains displayed the problem may be one of the following.
An Outdoor ARU Unit is not installed or missing
The coaxial cable is not connected properly either at the Outdoor ARU end or at the Indoor SIU.
The Outdoor ARU Unit and Indoor SIU Unit are not compatible and are not intended to be working together. (Check the part numbers of the Indoor SIU and Outdoor ARU units to determine if the correct units have been installed).

Step 2 Starting Install Steps
Press "ENTER" once. If a Front Panel Access PIN is required the "PIN/LOGOUT" LED will light indicating that a PIN must be entered. If not skip to Step 4

Step 3 Entering a Front Panel Access PIN
If a Front Panel Access PIN is required the "PIN/LOGOUT" LED will light
Enter the PIN using the steps shown under "Entering A Front Panel Access PIN" of this instruction card

Step 4 Set Traffic Capacity (2x, 4x, 8x)
Use "SELECT" to display the "BER/CAPACITY"
The display will show "0err c4". "c4" represents a traffic capacity of 4xE1
To change the capacity use the "UP" or "DOWN" keys to select from the available choices.
Press "ENTER" once

Step 5 Set Transmit Frequency
Use "SELECT" to diaplay Transmit Frequency
The nominal Transmit center frequency of the Outdoor ARU Unit will now be displayed
To change the frequency use the "UP" or "DOWN" keys to select from the available channels
Press "ENTER" once

Step 6 Set Transmit Power
Use "SELECT" to display Transmit Power
The Transmit power level will now be displayed as "OFF" or muted
To change the transmit power use the "UP" or "DOWN" keys to select the value required.
Press "ENTER" once

Step 7 Set Link ID Code
Use "SELECT" to display Link ID
The Link ID Code will now be displayed
To change the Link ID Code use the "UP" or "DOWN" keys to select the value required.
Press "ENTER" once

Step 8 Alarm Check
With no Tributary inputs connected to the XP4 all alarm indications should be normal, except for the RSL Alarm which will depend upon whether the radio path has been established and the remote terminal has been installed and powered up. (See antenna alignment instructions)

Antenna Alignment

Follow these steps to align the antennas over a radio path after both terminals have been installed and powered up

Prerequisite
The XP4 terminals at both ends of the link have passed the "First Time Installation & Power Up" procedure on the reverse side of this Instruction Card

Step 1 Measure Received Signal Level
Remove the BNC connector on the Outdoor ARU Unit and Connect a DC Voltmeter with a range of 0 to 5 VDC. Notice the Audible indication of received level.

Step 2 Align the Antenna - Both ends of the Link
Install the Gun Sight visual alignment aid. Loosen the antenna mount using the Allen Key provided and pan the antenna taking advantage of the Audible Indicator, Gun Sight and the DC Voltmeter. Tighten and lock both the elevation and azimuth adjustments using the Allen Key

Step 3 Verify Received Level
The DC Voltage on the BNC connector is calibrated such that 1VDC equals -80dBm, and that for each 1dB increase in received level the DC Voltage increases by 0.1 VDC (10dB per Volt)
Example 1.5VDC equals -75dBm, 3.5VDC equals -55dBm and 4VDC equals -50dBm

Step 4 Verify Link Operation
At the Indoor SIU Unit verify the Received Signal Level Display matched the expected value and that the BER performance monitor indicates "0err" All alarm indications should be normal without any Data tributaries connected. This indicates that the link is operating normally and ready to transmit Tributary Data

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To change the TRIB Configuration use the "UP" or "DOWN" keys to select "n" (normal or active) or "i" (inverted or not used)
Press "ENTER" to save that selection and move to the next Tributary.

Step 3 Set all Tributaries
Repeat for all available tributaries using the "ENTER" key to step through the available tributaries

Viewing & Changing Link Parameters After Installation

Viewing Link Parameters

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Entering A Front Panel Access PIN

Access to the "Change" feature will have been set as part of the default condition and may protected by a front panel access PIN which will have been provided to any authorized operator.

Step 1 Entering a PIN (four to seven digits)
Press "SELECT" to display "PIN/LOGOUT" on the front panel
Use the "UP" or "DOWN" keys to display the first digit of your front panel access PIN
Press "ENTER" once. The display will move to the next digit position of your PIN.

Step 2 Entering subsequent PIN digits
Use the "UP" or "DOWN" keys to display the second digit of your front panel access PIN
Press "ENTER" once. The display will move to the next digit position of your PIN.
Repeat this step until you have entered all the digits of your PIN then press "ENTER" twice

Step 3 Checking you are Logged In
You are logged in if the orange "LOGGED IN" LED is illuminated.
If you are not logged in try carefully re entering your PIN by repeating Steps 1 thru 2 again.
Note that the XP4 will automatically log you out after the front panel controls have been inactive for more than 5 minutes

Changing Link Parameters

Changing values in most cases may interrupt normal transmission and therefore should be done recognizing this impact on the data being transmitted by each active tributary. The Steps required to Change Link Parameters are the same as those shown for "First Time Installation and Power Up" of this instruction card except as shown below.

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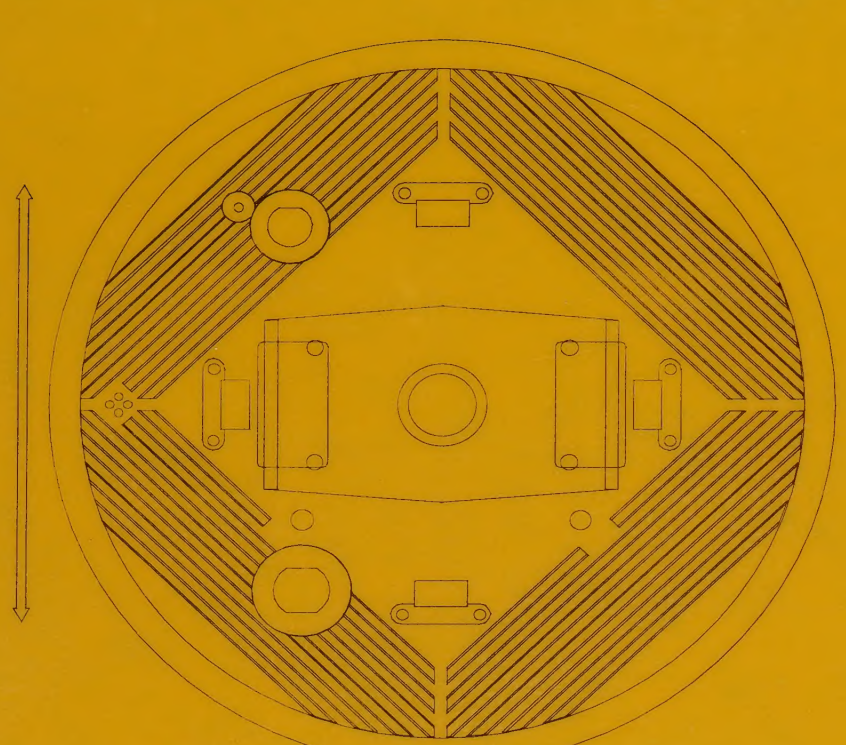
Changing the Link Traffic Capacity (2x, 4x, 8x) requires changes to be made at both ends of the Link. This cannot be performed from one end only because the frequency plan and channel frequency most both be changed independently.

Changing Other Parameters

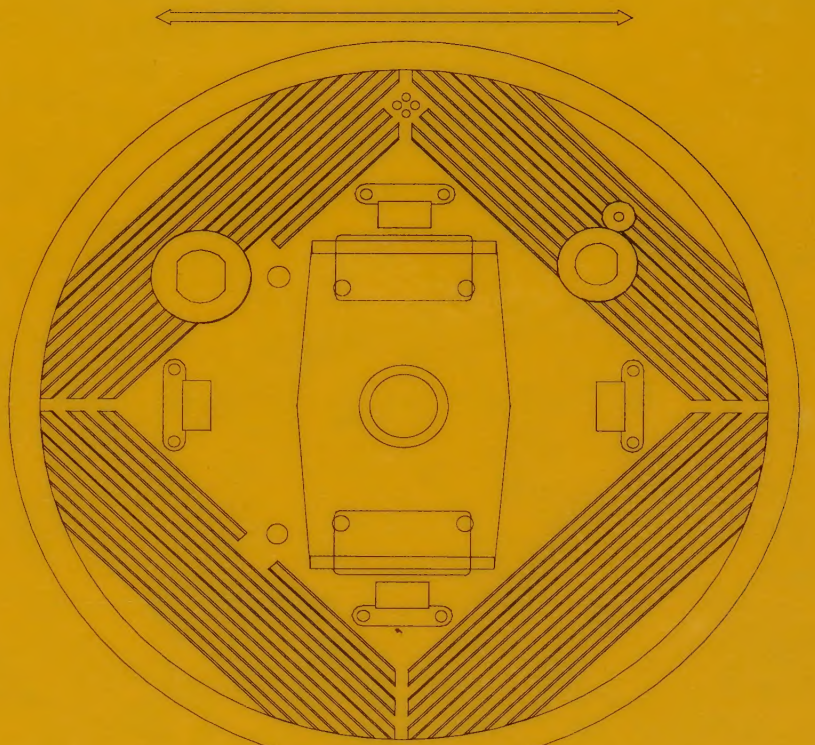
All other parameters can be Viewed and/or Changed from one end of the Link by selecting either the "LOCAL" or "REMOTE" keys

For more information and description of the Operation of the Innova XP4 Radio System refer to the XP4 Reference Manual and the Innova XPView fully featured Configuration & Maintenance PC based software program

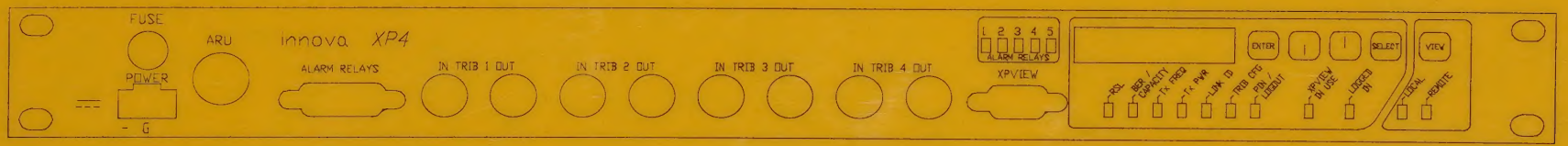
HORIZONTAL POLARIZATION
VERTICAL POLARIZATION
FUSE
ARU
POWER
Innova XP4
ALARM RELAYS
IN TRIB 1 OUT
IN TRIB 2 OUT
IN TRIB 3 OUT
IN TRIB 4 OUT
1 2 3 4 5
ALARM RELAYS
XPVIEW
ENTER
SELECT
VIEW
LOCAL
REMOTE



VERTICAL POLARIZATION



HORIZONTAL POLARIZATION



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